AMENDMENT TO THE CLAIMS

1. (Currently Amended)   A method for computing ~~an~~ a fast Fourier transform, the method comprising:

(a) receiving a ~~plurality of~~ N time-ordered first data values~~, said first data values having a total of N data points~~;

(b) sequentially storing in a first memory each of said ~~plurality of~~ N time-ordered first data values in the time-order;

(c) ~~providing~~ storing in a second memory a plurality of twiddle factors ~~stored in sequential locations~~ in a bit reversed order;

(d) reading R input butterfly data values of said ~~plurality of~~ N first data values where each of said R butterfly data values are separated by N/R first data values in said plurality of first data values;

(e) performing a radix R butterfly calculation on said R butterfly input data to generate R butterfly output data values;

~~(f) providing R butterfly output data values;~~

(~~g~~f) ~~sequentially~~ storing said R butterfly output data values in sequential memory locations of a third memory in the order in which the output data values are used in the ~~calculated~~calculations in a next stage;

(~~h~~g) performing said steps (c) - (~~g~~f) N/R x 2 times.

2. (Previously Presented) The method as in claim 1 further comprising the steps of:

~~sequentially~~ replacing said ~~plurality of~~ N first data values in said first memory with selected ones of said R butterfly output data ~~said plurality of sequentially stored data~~ stored in said third memory location;

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Repeating steps (c) - (~~h~~g) a total of $\log_r(n)$ times.

3. (Original)   The method as in claim 1, wherein R=2.

4. (Original)   The method as in claim 1, wherein said R=4.

5. (Currently Amended)   ~~An apparatus~~ Apparatus for calculating ~~an~~ fast Fourier transform, the apparatus comprising:

       a first processor stage having an output including:

              a first memory ~~for storing~~ containing ~~a plurality of~~ N time-ordered ~~N~~ input data values, said ~~plurality of~~ N input data values being stored sequentially in the ~~time-ordered~~ ~~manner~~ of said N input data values;

              a second memory ~~for storing~~ containing a plurality of twiddle factor values stored in said second memory in a bit-reversed order;

              a third memory ~~for sequentially storing~~ containing a plurality of output data values ~~in said order calculated~~; ~~and~~

              a radix R fast Fourier transform calculator coupled to said first, second, and third memories, said radix R fast Fourier transform calculator being operative to receive from said first memory, R selected data values of said N input data values, each of the R ~~input~~ data values being separated by N/R input data values, said radix R ~~FFT~~ fast Fourier transform calculator further being operative to receive at least one twiddle factor value from said second memory, and said radix R fast Fourier transform~~FFT~~ calculator further being operative to calculate R output data values and to write said R output data values ~~sequentially~~ into sequential memory locations of ~~said~~ said third memory; and

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a second processor stage coupled to said output of said first processor stage, wherein said R output data values are stored said third memory in the order said R output data values are used in the ~~ealeulated~~calculations in said second processing stage.

6. (Original)   The apparatus of claim 5 wherein R equals 2.

7. (Original)   The apparatus of claim 5 wherein R equals 4.

8. (Currently Amended)   A digital Digital signal processing apparatus for performing a fast Fourier transform calculation comprising:

a first processor stage having an output and including:

a digital signal processor operative to receive ~~a plurality of~~ N time-ordered first data values, ~~said first data values having a total of N data points~~;

said digital signal processor operative to sequentially store in a first memory each of said ~~plurality of~~ N first data values in the time-order;

said digital signal processor operative to ~~provide~~ store in a second memory a plurality of twiddle factors stored in sequential locations in a bit reversed order;

said digital signal processor operative to read R input butterfly data values of said ~~plurality of~~ N first data values where each of said R input butterfly data values are separated by N/R data points in said plurality of first data values;

said digital signal processor operative to perform a radix R butterfly calculation on said R butterfly input data;

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said digital signal processor operative to provide R

butterfly output data values; and

said digital signal processor operative to sequentially store

said R butterfly output data values in <u>sequential memory locations</u>

<u>of</u> a third memory<u>;</u>

<u>a second processor stage having an input coupled to said</u>

<u>output of said first processor stage, wherein said R butterfly</u>

<u>output data values are stored in said sequential memory locations</u>

<u>in said third memory</u> in the order said R butterfly output data

values are <u>used in the</u> ~~calculated~~<u>calculations</u> in said second

<u>processor stage</u>.

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